

# Laparoscopy May Have a Role in the Drainage of Liver Abscess: Early Experience at Owerri, Nigeria

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## ABSTRACT

**Background:** Image-guided percutaneous drainage with antimicrobial agents is the standard modality of treatment of liver abscess. Open surgical drainage, and lately laparoscopic drainage becomes useful in selected patients. Nigeria is awakening late to the laparoscopic surgery revolution. Public health institutions have started making enormous investments in minimal access surgery, which can augment deficient diagnostic capacities. **Objective:** To describe the outcomes of the patients who underwent laparoscopic liver abscess drainage at the Federal Medical Centre, Owerri. **Materials and Methods:** A retrospective analysis of the laparoscopic liver abscess drainage procedures done between the period September 2007 and December 2012 was done. **Results:** A total of eight patients in the study period were worked up for abscess surgical drainage based on ultrasound (seven cases) and computed tomography (one case) supported localized collection in the liver. Intraoperatively, one patient was noticed to have nodules on the liver that was later confirmed as hepatocellular carcinoma. Operating time ranged from 37 to 126 min. There was no conversion to open surgery. On the follow-up, one patient had residual abscess of 45 mm diameter size, after 6 weeks, and in whose aspirate acid-fast bacilli were identified. **Conclusion:** Laparoscopic drainage should be considered in the management of liver abscess.

**KEYWORDS:** Drainage, laparoscopy, liver abscess

## INTRODUCTION

Hepatic abscess is an uncommon disease condition that has the potential for high mortality when untreated. Open surgical drainage was the usual treatment modality until the 1980s when image-guided percutaneous aspiration or drainage in addition to systemic antimicrobial agents became the standard of care.<sup>[1-3]</sup> Outcomes in patients with this disease have therefore improved with the ready access to interventional radiology in its diagnosis and management. Indications for surgical drainage have now been limited to cases of failure of percutaneous drainage, complications of percutaneous drainage and presence of concomitant intraabdominal surgical pathology.<sup>[1,4]</sup> The dearth of trained radiologists and drainage facilities may still account for high rate of case referrals for surgical drainage especially in developing countries.<sup>[5,6]</sup> The laparoscopic approach to drainage offers an option that can reduce the increased morbidity and

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mortality associated with open surgery. This study aims to evaluate the contribution of laparoscopy-guided to drainage of liver abscess in a public hospital in a developing country.

## MATERIALS AND METHODS

### Patients

From September 2007 to December 2012, 11 patients were referred to the Surgery Department of the Federal Medical Centre, Owerri from the internal medicine units. Of these, eight patients were worked up for laparoscopic abscess drainage. The case notes of these eight patients were reviewed and the following data were extracted: Patient demographics, initial volume of fluid drained from the liver, duration of the operation, duration of hospital stay, and complications of the procedure. Complete blood count, liver function tests and coagulation assays were routinely done on the patients. Abdominal ultrasound scan was done in all patients, which indicated liver abscess; one patient had a computed tomography (CT) scan in addition. Preoperative assessment showed abscess limited to the right lobe of the liver in five patients, multiloculated abscesses involving both lobes in three patients.

### Surgical technique

Under general anesthesia, initial peritoneal access for pneumoperitoneum was achieved usually with Veress needle through the umbilicus. Subsequently, a 10 mm laparoscope was introduced. Subsequent port positions depended on the pathology seen after the initial peritoneal exploration. Two 5 mm ports were usually placed at the left and right subcostal positions.

The adhesions between the liver and the diaphragm as well as the anterior abdominal wall were freed to expose the area of the liver where the abscess was pointing. Aspiration of the cavity was done with Veress needle passed percutaneously or with suction nozzle; and in the process samples for bacterial cultures were taken. Finding of anchovy-sauce-like fluid supported the diagnosis of amoebic liver abscess. Thereafter, de-roofing of the cavity was done with electrocautery to enable insertion of a drainage catheter [Figure 1].

## RESULTS

Eight patients were worked up with the intent of carrying out laparoscopic drainage of liver abscess. They were receiving treatment in the internal medicine units for between 2 and 13 weeks before referral. The ultrasound scan suggested the abscess cavity to be between 7 and 25 cm in diameter. Out of these, intraoperatively, one case of hemangioma and one case of multiple hepatic nodules were seen [Table 1]. Among those that had confirmed liver abscess, the age range of patients was 31-54 years and male to female ratio was 2:1. The volume of the initial aspirate ranged from 750 to 1400 ml. Mean operating time was 55 min. There was no conversion to open surgery and no postoperative mortality was recorded. The average postoperative



**Figure 1:** Drainage catheter (chest tube) passed percutaneously into the abscess cavity during laparoscopy

**Table 1: Clinical characteristics of eight patients intended for laparoscopic liver abscess drainage**

| Age | Sex    | Volume drained (ml) | Operation duration (min) | Postoperative stay (days) | Comorbidity     |
|-----|--------|---------------------|--------------------------|---------------------------|-----------------|
| 36  | Male   | 950                 | 126                      | 3                         |                 |
| 30  | Male   | 800                 | 55                       | 5                         |                 |
| 54  | Female | 1400                | 58                       | 12                        | Diabetes        |
| 58  | Female | -                   | 37                       | 1                         | Liver carcinoma |
| 35  | Male   | 1200                | 42                       | 7                         |                 |
| 40  | Female | 500                 | 40                       | 4                         |                 |
| 31  | Female | 750                 | 45                       | 3                         |                 |
| 28  | Female | -                   | 39                       | 1                         | Hemangioma      |

hospital stay was 4.5 days. Postprocedure microbiological analysis of aspirate yielded a positive culture of *Drbgdqbbgh`bnkb* in one patient while cytology demonstrated acid fast bacilli in another. This patient was monitored with serial ultrasound scan, at 6 weeks postprocedure the residual abscess cavity was 45 mm in diameter.

## DISCUSSION

A paradigm shift did occur in the management of hepatic abscesses about four decades ago, and with it the exceptionally high mortality associated with this disease condition has been drastically reduced.<sup>[7,8]</sup> The first line of management has largely become ultrasound or CT-guided drainage in combination with antimicrobial agents. Amoebic liver abscess, a disease more prevalent in the tropics and low socioeconomic groups, is primarily treated with medications.<sup>[9,10]</sup> This approach has shown significant advantage in being safe and efficacious and low-cost. The indications for surgical drainage have thus receded. Failure of conservative therapy, rupture of the abscess, presence of multiloculated abscesses, and complications from percutaneous drainage may necessitate surgical intervention. The surgical option also has the added advantage of accurate positioning of drainage catheter and simultaneous treatment of the abscess and underlying abdominal pathology.<sup>[4,11]</sup>

Various reports have explored the laparoscopic approach in the management of liver abscesses.<sup>[1,4]</sup> Whereas it could be argued that this may be an unnecessarily expensive modality of treatment, the known benefits of minimally invasive surgery present a compelling response. It offers a middle ground between open surgical and percutaneous drainage. On one hand it helps in the early return of gastrointestinal function and resumption of normal activities; on the other hand it potentially achieves a better abscess drainage.<sup>[12,13]</sup> More importantly laparoscopic drainage has been shown to be safe. There was neither mortality nor conversion to open surgery in our series, which is in line with other reports in the literature.<sup>[12,14]</sup> Adequate patient selection may partly be accountable for the very good results.

The value of a trained radiologist cannot be discounted for the successful conduct of percutaneous drainage. The procedure can have uncommon but serious complications.<sup>[5,12,15,16]</sup> Trained personnel may be a challenge in some developing countries, a reason for continued persistence with open surgical drainage. Accuracy of radiological diagnosis is also a problem in our environment. Doppler ultrasound and CT are not readily available. The case of liver hemangioma and carcinoma in our series should not have been misdiagnosed preoperatively. However, the recourse to laparoscopy may have obviated serious hemorrhagic complication. Utilization of laparoscopic ultrasonography may be another added advantage compared with transabdominal in localizing the abscess site for drainage.<sup>[13,17]</sup>

A small number of cases and the retrospective design are limitations of the present study. However, we seek to highlight the possible value of laparoscopy in improving diagnostic and

therapeutic capacities in our peculiar environment. We also want to demonstrate the modest progress laparoscopic surgery is making from its humble beginnings in our sub-region.<sup>[18]</sup>

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